

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-16-5

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

MERCEDES-BENZ AG

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Mercedes-Benz AG 1997 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Mobile Crane, Road Grader, Harvester, Compressor

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
VMB22.R6DARA	21.9/14.6 (1338/892) 11.0 (667)	Turbocharger Charge Air Cooler Smoke Puff Limiter

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust Emissions (g/bhp-hp)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.2	0.5	5.7	0.2	10	5	18

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 20th day of March 1997.

A large, stylized handwritten signature in black ink, appearing to read 'R. B. Summerfield', is written over the printed name and title.

R. B. Summerfield, Chief
Mobile Source Operations Division

Manufacturer MB Engine Family VMB22.R6DARA
Displacement: 21.9/14.6/11.0 / 1338/892/667 Liters/Cubic Inches Eng Config: V12, V8, V6/OHV
All Codes in Eng Fam: CA 49S 50S X Cert Test Procedures: ARB EPA X
Valves/Ports per Cylinder 2 Strokes per Combustion Cycle 4
Maximum Rated Power: 670 HP (500 KW) @ 2100 RPM
Ignition: Compression X Compression with Glow Plug Spark
Fuel Type(s): Dedicated X Flex-Fuel Dual-Fuel Diesel X M100 M85
CNG LNG LPG Other (specify)
Diesel Cert Fuel: 40 CFR 86.1313-94 X Other (specify)
Primary Service Equipment: Crane, Road Grader, Harvester, Compactor
Exhaust ECS (e.g., MFI, TC, CAC): EM, CAC, SPL, TC
(use abbreviations per SAE J1930 JUN93)

Engine Model (Eng Code)	Rated IIP @ RPM	Fuel Rate @ Rated IIP mm ³ / stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
OM 444 LA (444 LA.EI/1)	670/2100	165 ... 175	EP 4717 004 017 1721			
OM 444 LA (444 LA.EI/2)	643/1900	170 ... 180	EP 4717 004 017 1721			
OM 444 LA (444 LA.EI/3)	600/2100	148 ... 158	EP 4717 004 017 1721			
OM 442 LA (442 LA.EI/1)	543/2100	210 ... 223	EP 4318 004 017 1921			
OM 442 LA (442 LA.EI/2)	496/2100	192 ... 204	EP 4317 004 017 1721			
OM 442 LA (442 LA.EI/3)	496/1900	206 ... 218	EP 4317 004 017 1721			
OM 442 LA (442 LA.EI/4)	441/1700	200 ... 212	EP 4317 004 017 1721			

Date Issued: _____

Revisions: _____

Engine Model (Eng Code)	Rated HP @ RPM	Fuel Rate @ ₃ Rated HP mm / stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
OM 442 LA (442 LA.EI/5)	429/2100	167 ... 177	EP 4317 004 017 1721			
OM 442 LA (442 LA.EI/6)	429/1900	180 ... 191	EP 4317 004 017 1721			
OM 442 LA (442 LA.EI/7)	398/2100	157 ... 167	EP 4317 004 017 1721			
OM 442 LA (442 LA.EI/8)	382/1700	173 ... 183	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/2)	335/2100	170 ... 180	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/3)	335/1900	185 ... 197	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/4)	320/2100	163 ... 173	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/5)	316/1800	181 ... 193	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/6)	292/1600	184 ... 196	EP 4317 004 017 1721			
OM 441 LA (441 LA.EI/1)	402/1900	223 ... 237	EP 4125 004 017 1921			

Date Issued: _____

Revisions: _____